Sex Differences in Mu-Opioid Receptor Expression in A1 Norepinephrine Neuron Subpopulation

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Chronic stress is a component of many psychiatric disorders as well as drug addiction (Chaijale 2017), and the modulation of said stress is one of the functions of the norepinephrine system and its intrinsic receptors (Guajardo 2017). The mu opioid receptor (MOR) inhibits the stress response through interactions with the norepinephrine (NE) system (Chaijale 2013). While research has been done on the expression of MOR in the locus coeruleus (Guajardo 2017), a norepinephrine-dense region of the hindbrain, there are a variety of NE subpopulations such as the A1 region in which MOR expression has not been characterized by existing literature. In addition to a lack of baseline understanding of MOR-A1 expression, there is a lack of knowledge in the scientific community regarding sex differences in this expression. This study aimed to quantify the expression of MOR within A1 norepinephrine neurons of male and female mice through immunohistochemical identification. While insignificant results were obtained, the continuation of this research both in the A1 region and other norepinephrine-dense regions is crucial in understanding molecular sex differences in stress-related psychiatric disorders and drug abuse, both of which exhibit sex differences in prevalence and morphology.